*By LCdr. Randy Stearns*

# Sucking Rubber...Not!

We were on the second leg of our transit to NAS Roosevelt Roads for an orange air detachment after stopping at NAS Key West for gas. Weather and winds looked good for our 1,045-mile trip to Puerto Rico over open ocean. A few suitable diverts existed along the way in case of any aircraft malfunction. We had to climb to a minimum-cruise altitude of 33,000 feet, which would leave us with an on-deck minimum of 2,000 pounds of gas. The Grand Turks was the only suitable divert en route Puerto Rico, so after passing it, we were committed to Roosey.


Takeoff, climb and cruise were all normal. We were letting a newly-crowned section leader take the No. 3 plane all the way to Puerto Rico. Our ETE was 2+45, which would put us on deck with 2,500 pounds. No problem, the winds were favorable, and our calculations were right on… well, except for one crucial item in our jet. About one hour into the flight, my LOX light in the back started slowly flickering for about 15 to 20 minutes. I asked the pilot what the LOX gage read, and he said 6 liters. We agreed this would be more than enough to reach our destination.

On man-up at Key West, the LOX-quantity gage fluctuated between 6 and 8 liters. We assumed there were approximately 7 liters of LOX, but, even if the amount actually were 6 liters, it still would be enough to make the 2.3-hour flight to Roosevelt Roads. According to F-14 NATOPS, 5 liters of LOX with a cabin altitude of 15,000 feet will provide 5.3 hours of oxygen for both aircrew. Our cruise altitude was 33,000 feet, but our cabin pressure was reading 14,000 feet, which was 2,000 feet above what we normally would see at this altitude. The LOX light came on hard 20 minutes after it started flickering.

The LOX gage was reading between 4 and 5 liters, but our concern was that we really didn't know how much LOX we had. The pilot and I agreed to have me go mask off for 10 minutes, and mask on for 5 minutes, to conserve LOX. The pilot would stay on the entire time. We were experienced aviators with more than 2,000 Tomcat hours each and felt it would be no big deal to stay mask off at this cabin pressure. Wrong! With 1+00 of flight time remaining, the LOX ran out. We were 150 miles past our last divert and committed to Roosey Roads. We felt confident we could make it without descending.

After 15 minutes off the LOX, I told the pilot I was not feeling right. I had felt the first signs of hypoxia setting in. I told him we needed to descend, and the pilot notified the flight lead we were descending. Thirty seconds later, I told him I was "in trouble" and needed to get down (with a lot more inflection in my voice than I can write

here). At this point, sheer panic set in, as I was about 30 seconds from passing out. The reality that there was nothing I could do to stop the hypoxia from setting in was making me feel like I was trapped in my own private tomb. I was not thinking clearly and our wingman said I appeared to be "out of it" from what he could see in our cockpit. The one thing I remember is the pilot telling me to pull the green apple. It seemed like it took an eternity to find it and to get that nice flow of oxygen into my lungs.

Within a span of four to five minutes, my pilot felt the same overwhelming feeling of hypoxia. I thought, "Oh my God, I can't believe this is happening." The onset of hypoxia was rapid and violent, much more so than what I remember during my last pressure-chamber ride at flight physiology. It always was fun to see your buds get hypoxic, because you always knew someone would help you out if the training event went awry. Well, I'm here to tell you that no amount of training prepares you for the reality of what we were experiencing.

We knew from our training that we were getting hypoxic. The only thing to hope for was our emergency oxygen supply would hold out long enough for us to get to a lower altitude. We finally got to 25,000 feet, which gave us a 9,000-foot cabin pressure. We were now feeling better about ourselves, and I quickly rechecked our gas. It still showed us arriving within the SOP for on-deck fuel (2,000 pounds). After five minutes, my emergency oxygen ran out. My body still was shaking from the initial hypoxia, but I felt the worst was over. I took off my mask, and, after five minutes, was feeling hypoxic again. The 9,000-foot cabin pressure was not enough to get my oxygen level back to normal levels. I told my pilot, whose emergency oxygen lasted 15 to 20 minutes, that I needed to go lower. He descended to 19,000 feet, which gave us 7,000-foot cabin pressure. I slowly started to feel better, but now we had another problem: Fuel at this flight level was going to be an issue.

We told the most fuel-critical of our three jets to stay high and continue on to Roosey. We kept the other wingman with us in case we had any more problems or had to eject over the ocean. At least he could pass a position report for us to the Coast Guard to come and get us in the Atlantic. We throttled back and hoped the usual afternoon tropical thunderstorm wouldn't be sitting over the airfield. We would be on deck with fewer than 2,000 pounds of gas, and any delay would put us in the hurt locker. The next 30 minutes of transit seemed to last forever. My pilot and I felt as though we had been used as punching bags because our bodies were so drained after the hypoxic events. We just wanted to get on deck and taste fresh air. We landed without incident, but the lessons learned are numerous.

We never considered running out of LOX. With limited diverts available over open ocean, a descent would have made it difficult to get to our destination. If this had happened 600 miles from our destination, we would have returned to NAS Key West or diverted into a foreign airfield. What if weather had clobbered the field for 10 minutes?

The pilot and I both had "I can hack it" mentalities. We were experienced and had flown mask-off at this cabin pressure before. The post-flight inspection found not only was our LOX indicator reading incorrectly, but a nut to keep the cabin pressure steady had backed off its normal position. This explained the rapid onset of hypoxia: The actual cabin pressure was higher than the scheduled cabin pressure.

We should have declared an emergency but didn't, which caused more stress. Having two crew members onboard saved us. Whether we admit it or not, we were not thinking clearly, but between the two of us, enough info was passed to keep our heads in the game long enough to make it to a lower altitude.

We now pay closer attention to preflighting our emergency oxygen supply in our seat pans. Without a doubt, it is what kept this incident from becoming a Class A mishap.

When the normal supply of LOX is depleted and the emergency oxygen in the seat pan is activated, you must turn the normal LOX on-off switch to the off position. If the LOX switch is left on with the seat pan activated, the emergency oxygen supply will bleed off and deplete the emergency supply at a much faster rate. This may account for why the RIO's emergency-oxygen supply lasted only five minutes while the pilot's lasted 20 minutes.

The chain of events could have been broken one hour after takeoff if we had returned to our point of departure and checked our LOX bottle.

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